

## Data Validation Checklist Inorganic Analyses

Project: 35<sup>TH</sup> Avenue Superfund Site  
 Laboratory: TestAmerica – Savannah, GA  
 Method: SW-846 6010C (Aluminum, Arsenic, Iron, and Lead)  
 Matrix: Soil  
 Reviewer: Karen M Trujillo, URS Group, Inc.  
 Concurrence<sup>1</sup>: Martha Meyers-Lee, URS Group, Inc.

Project No: 60430028; 1  
 Job ID.: 680-109515-3  
 Associated Samples: Refer to **Attachment A** (Sample Summary)  
 Samples Collected: 01/27/2015 and 01/28/2015  
 Date: 10/26/2015  
 Date: 11/05/2015

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
1. Were sample preservation requirements met? If pH of aqueous sample >2 and was not adjusted by laboratory prior to analysis, J- flag positive results and R- flag non-detect results.			✓		
2. Were all COC records signed and integrity seals intact, indicating that COC was maintained for all samples?	✓				
3. Were there any problems noted in laboratory data package concerning condition of samples upon receipt?		✓			
4. Do any soil/sediment samples contain more than 50% water? If yes, then results are to be reported on a wet-weight basis.		✓			
5. Have any technical holding times, determined from date of collection to date of analysis, been exceeded? (Hg: ≤28 days, other metals: ≤6 months; Cr+6: ≤24 hours from extraction). If not, then J- flag positive results and R- flag non-detect aqueous results.		✓			
6. Were results for all project-specified target analytes reported?	✓				
7. Were project-specified Reporting Limits achieved for undiluted sample analyses?		✓		Resident Soil RSL with THQ = 1.0 (ORNL, June 2015) for target analytes: <ul style="list-style-type: none"> <li>Aluminum: 77,000 mg/Kg</li> <li>Arsenic: 0.68 mg/Kg</li> <li>Iron: 55,000 mg/Kg</li> <li>Lead: 400 mg/Kg</li> </ul> The MDL for each target analyte is less than the respective above-mentioned RSL in undiluted samples.	
8. Were method blank (MB) prepared at the appropriate frequency (one per 20 samples, batch, matrix, and level)?	✓				
9. Was a calibration blank (ICB/CCB) analyzed at the beginning, after every 10 <sup>th</sup> sample, and at the end of each analytical run?	✓				
10. Were target analytes detected in the method and/or calibration blanks?		✓		Target analyte was not detected in the method blank. Calibration blanks were not evaluated.	

<sup>1</sup> Independent technical reviewer

## Data Validation Checklist (Continued)

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
11. Were target analytes reported in equipment/rinsate blanks analyses above the DL?			✓	According to the QAPP, a rinsate blank is to be collected after each decontamination event, which occurs once per week per the client. A rinsate blank is not associated with this sampling event. Blank contamination will be evaluated based on method blank results.	
12. Were contaminants detected in samples below the blank contamination action level? <ul style="list-style-type: none"> <li>○ If blank result &gt; RL, <ul style="list-style-type: none"> <li>• Flag sample results <math>\leq</math> RL with a U</li> <li>• Flag positive sample results &gt; RL and <math>\leq 10\times</math> blank result, as J+ positive results</li> </ul> </li> <li>○ If blank result <math>\leq</math> RL, <ul style="list-style-type: none"> <li>• Flag sample results <math>\leq</math> RL with a U</li> <li>• Flag positive sample results &gt; RL and <math>\leq 10\times</math> blank result, as J+ positive results</li> </ul> </li> </ul>			✓	Target analytes were not detected during the analysis of the method blank. An evaluation of the effect of blank contamination on soil sample results was based on method blank results, and not calibration blank results.	
13. Are there negative laboratory blank results with the absolute value $\leq$ RL? If yes, then flag positive and non-detect sample results that are $< 10\times$ absolute blank value as J- and UJ, respectively.		✓			
14. Was a field duplicate analyzed?	✓			<ul style="list-style-type: none"> <li>• HP0332A-CSD6" (680-109515-56), which was analyzed and reported under Job ID 680-109515-4, is a field duplicate of HP0332A-CS6" (680-109515-36)</li> <li>• CV0312A-CSD6" (680-109515-57), which was analyzed and reported under Job ID 680-109515-4, is a field duplicate of 680-109515-48 (CV0312A-CS6")</li> </ul>	
15. Was precision deemed acceptable as defined by the project plans?		✓		Refer to <b>Attachment B</b> (Field Duplicate Evaluation)	J
16. Were initial and continuing calibration standards analyzed at the lab/project-specified frequency for each instrument? <ul style="list-style-type: none"> <li>○ 6010C: <ul style="list-style-type: none"> <li>• ICAL: Blank and one standard</li> <li>• ICV initially, and CCV every 10<sup>th</sup> sample and at the end of the analytical run</li> <li>• Lower Limit of Quantitation Check Sample (CRI) to be analyzed after establishing lower laboratory reporting limits and as needed</li> </ul> </li> <li>○ 7471A: <ul style="list-style-type: none"> <li>• ICAL: Blank and five standards</li> <li>• ICV initially, and CCV every 10<sup>th</sup> sample and at the end of the analytical run</li> </ul> </li> <li>○ 7196A: <ul style="list-style-type: none"> <li>• ICAL: Blank and minimum of five standards</li> <li>• ICV initially, and CCV every 10<sup>th</sup> sample (15<sup>th</sup> per Method) and at the end of the analytical run</li> </ul> </li> </ul>	✓			6010C: 02/04/2015 and 02/05/2015. One blank and one standard initially. ICV initially, and CCV every 10 samples and at end of run. CRI after initial calibration blank analysis.	
17. Were these results within lab/project specifications? <ul style="list-style-type: none"> <li>○ 6010C <ul style="list-style-type: none"> <li>• ICV/CCV (Criteria: 90-110%R):</li> </ul> </li> </ul>	✓				

## Data Validation Checklist (Continued)

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
<ul style="list-style-type: none"> <li>▪ If %R &lt;75, then J- flag positive results and R-flag non-detects</li> <li>▪ If 75-89%R, then J- flag positive results and UJ flag non-detects</li> <li>▪ If 111-125%R, then J flag positive results</li> <li>▪ If &gt;125%R, then J+ flag positive results</li> <li>▪ If &gt;160%R, then R flag positive results</li> <li>• CRI (Method: 70-130%R, Laboratory: 50-150%R; Project: 50-150%R for Sb, Pb, and Tl, and 70-130%R for all other analytes): <ul style="list-style-type: none"> <li>▪ If CRI %R &lt;50 (&lt;30% for Sb, Pb, Tl), then R flag results <math>\leq 2x</math> RL and J flag positive results <math>&gt;2x</math> RL</li> <li>▪ If CRI %R 50-69% (30-49% for Sb, Pb, Tl), then J- and UJ flag positive results <math>&lt;2x</math> RL and ND, respectively</li> <li>▪ If CRI %R &gt;130% and <math>\leq 180\%</math> (&gt;150%, but <math>\leq 200\%</math> for Sb, Pb, Tl), then J+ flag positive results <math>&lt;2x</math> RL</li> <li>▪ If CRI %R &gt;180% (&gt;200% for Sb, Pb, Tl), then R flag positive results</li> </ul> </li> <li>○ 7471A <ul style="list-style-type: none"> <li>• ICV/CCV (Criteria: 80-120%R): <ul style="list-style-type: none"> <li>▪ If correlation coefficients &lt;0.995, then J and UJ flag positive and non-detect results.</li> <li>▪ If %R &lt;65, then J- flag positive results and R-flag non-detects</li> <li>▪ If 65-79%R, then J- flag positive results and UJ flag non-detects</li> <li>▪ If 121-135%R, then J flag positive results</li> <li>▪ If &gt;135%R, then J+ flag positive results</li> <li>▪ If &gt;170%R, then R flag positive results</li> </ul> </li> <li>• CRI (Method: Not required, Laboratory: 50-150%R, Project: 70-130%R): <ul style="list-style-type: none"> <li>▪ If CRI %R &lt;50, then R flag results <math>\leq 2x</math> RL and J flag positive results <math>&gt;2x</math> RL</li> <li>▪ If CRI %R 50-69%, then J- and UJ flag positive results <math>&lt;2x</math> RL and ND, respectively</li> <li>▪ If CRI %R &gt;130% and <math>\leq 180\%</math>, then J+ flag positive results <math>&lt;2x</math> RL</li> <li>▪ If CRI %R &gt;180%, then R flag positive result</li> </ul> </li> </ul> </li> <li>○ 7196A: <ul style="list-style-type: none"> <li>• ICV/CCV (Criteria: 90-110%R): <ul style="list-style-type: none"> <li>▪ If correlation coefficients &lt;0.995, then J and UJ flag positive and non-detect results.</li> <li>▪ If %R &lt;65, then J- flag positive results and R-flag non-detects</li> <li>▪ If 65-90%R, then J- flag positive results and UJ flag non-</li> </ul> </li> </ul> </li> </ul>					

## Data Validation Checklist (Continued)

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
detects <ul style="list-style-type: none"> <li>▪ If 110-135%R, then J flag positive results</li> <li>▪ If &gt;135%R, then J+ flag positive results</li> <li>▪ If &gt;170%R, then R flag positive results</li> </ul>					
18. Was the interference check sample (ICS) analyzed at the beginning of each ICP analytical run?	✓				
19. Are ICS recoveries within 80-120% of the true value? If not, qualify data as follows when native Al, Fe, Ca, and Mg sample concentrations are equal to or greater than the ICS spiking level: <ul style="list-style-type: none"> <li>○ If &gt;120%R (or &gt;true value plus 2x CRQL), J+ flag positive results</li> <li>○ If 50-79%R (or less than true value – 2x the CRQL), J- flag positive results and UJ flag non-detects</li> <li>○ If &lt;50%R, J- flag positive results and R-flag non-detects</li> </ul>	✓				
20. Was a LCS analyzed for each preparation batch (one per 20 samples per matrix and level)?	✓				
21. Did LCS recoveries meet method/laboratory/project (80-120%R) specifications? <ul style="list-style-type: none"> <li>○ Soil:               <ul style="list-style-type: none"> <li>• LCS result &gt; Upper control limit (UCL): J+ flag positive results</li> <li>• LCS result &lt; Lower control limit (LCL): J- flag positive results and UJ flag non-detects</li> </ul> </li> <li>○ Aqueous:               <ul style="list-style-type: none"> <li>• If &lt;50%R, then J- and R flag positive and ND results, respectively</li> <li>• If 50-LCL%R, J- and UJ flag positive and ND results, respectively</li> <li>• &gt;UCL: J+ Flag positive results</li> <li>• &gt;150%R: R Flag results</li> </ul> </li> </ul>	✓				
22. Was the RPD between LCS and LCSD results within method/laboratory /project control limits ( $\leq 20\%$ RPD)? If not, J and UJ flag positive and non-detect results, respectively			✓	LCS only	
23. Was a Matrix Spike (MS) and Matrix Spike Duplicate (MSD) analyzed once per preparation batch?	✓			<ul style="list-style-type: none"> <li>• Batch 369215:               <ul style="list-style-type: none"> <li>○ 680-109515-44 (CV0503B-CS6"), MS/MSD/PDS</li> <li>○ 680-109515-49 (Batch), MS/MSD. Lab sample 680-109515-49 is a project-specific sample (CV0312A-CS12") and results were reported under Job ID 680-109515-4.</li> </ul> </li> <li>• Batch 369204: 680-109515-15 (Batch Sample), MS/MSD/PDS. Lab sample 680-109515-15 is a project-specific sample (CV0627B-GS6") and results were reported under Job ID 680-109515-2.</li> </ul>	
24. Is the MS and MSD parent sample a project-specific sample?	✓	✓			
25. Was a post-digestion spike (PDS) analysis conducted when MS and/or MSD results did not meet control limits (Note: PDS is not required for silver, mercury, or hexavalent chromium)?	✓				

## Data Validation Checklist (Continued)

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
<p>26. For all analytes with sample concentration <math>&lt; 4 \times</math> spike concentration, are spike recoveries within method (6010C: 75-125%R MS/MSD and 80-120%R PDS; 7471A: 80-120%R MS/MSD; 7196A: 85-115%R MS), laboratory (MS, MSD, and PDS: 75-125%R for 6010C/7471 (as applicable) and 80-120%R for 7196), and project (as noted below) specifications? <i>Only QC results for project samples are evaluated.</i></p> <p>If not,</p> <ul style="list-style-type: none"> <li>○ 6010C: <ul style="list-style-type: none"> <li>• If MS %R <math>&lt; 30</math> and PDS %R <math>&lt; 75</math>, then J- and R Flag positive and ND results, respectively</li> <li>• If MS %R <math>&lt; 30</math> and PDS %R <math>&gt; 75</math>, then J flag positive and UJ flag non-detect results</li> <li>• If MS and MSD %R 30-74 and PDS%R <math>&lt; 75</math>, then J- flag positive and UJ flag non-detect results</li> <li>• If MS and MSD %R 30-74 and PDS%R <math>\geq 75</math>, then J flag positive and UJ flag non-detect results</li> <li>• If MS, MSD, and PDS %R <math>&gt; 125</math>, J+ flag positive results</li> <li>• If MS and MSD %R <math>&gt; 125</math> and PDS %R <math>\leq 125</math>, then J flag positive results</li> <li>• If MS and MSD %R <math>&lt; 30</math> and no PDS, then J- flag positive and R-flag non-detect results</li> <li>• If MS and MSD %R 30-74 and no PDS, then J- and UJ flag positive and non-detect results, respectively</li> <li>• If MS and MSD %R <math>&gt; 125</math> and no PDS, then J+ flag positive results</li> </ul> </li> <li>○ 7471A/7196: <ul style="list-style-type: none"> <li>• If MS %R <math>&lt; 30</math>, then J- and R Flag positive and ND results, respectively</li> <li>• If MS and MSD %R 30-LCL, then J- flag positive and UJ flag non-detect results</li> <li>• If MS and MSD %R <math>&gt; \text{UCL}</math>, then J+ flag positive results</li> </ul> </li> </ul>		✓		CV0503B-CS6" (680-109515-44): Lead MS and MSD @170 and 100%R (75-125%R). A PDS analysis was conducted, but the recovery not calculated by the laboratory. A PDS recovery of 98% (80-120%R) was calculated for lead by the data validator. Qualification of data is not warranted, as the MSD recovery met control limits.	
<p>27. For all analytes with sample concentration <math>&lt; 4 \times</math> spike concentration, were laboratory/project (<math>\leq 20\%</math>RPD) criteria met for precision during the MS and MSD analysis? <i>Only QC results for project samples are evaluated.</i></p> <ul style="list-style-type: none"> <li>○ If RPD <math>&gt; 20\%</math>, J and UJ flag positive and non-detect results.</li> </ul>	✓				
28. Was a serial dilution conducted for 6010C/EPA 200.7?	✓				
29. Is the serial dilution parent sample a project-specific sample?	✓	✓		<ul style="list-style-type: none"> <li>• 680-109515-44 (CV0503B-CS6")</li> <li>• 680-109515-15 (Batch Sample). Lab sample 680-109515-15 is a project-specific sample (CV0627B-GS6") and results were reported under Job ID 680-109515-2.</li> </ul>	
30. Is the percent difference between the serially diluted result and undiluted result less 10% (for those analytes with native concentrations greater than 50x the DL)? <i>Only QC results for project</i>	✓				

**Data Validation Checklist (Continued)**

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
<i>samples are evaluated.</i> ○ If %D >10, J and UJ flag positive and non-detect results, respectively.					
31. Was a laboratory duplicate analyzed?		✓			
32. Was the lab duplicate analysis conducted on a project-specific sample?			✓		
33. Were criteria for laboratory/project precision met? <i>Only QC results for project samples are evaluated.</i> ○ If RPD values >20% (35% for soil/sediment) or absolute difference > RL (2x RL for soil/sediment), then J and UJ flag positive and non-detect results, respectively			✓		
34. Were lab comments included in report? If yes, summarize contents or attach a copy of the narrative.	✓			Refer to <b>Attachment C</b> (Case Narrative)	
<b>Comments:</b> The data validation was conducted in accordance with the <i>Non-Industrial Use Property Sampling Event QAPP for the 35th Avenue Removal Site, Birmingham, Alabama, Revision 1</i> (OTIE, October 2012). The data review process was modeled after the <i>USEPA Contract Laboratory Program (CLP) National Functional Guidelines (NFG) for Inorganic Data Review</i> (EPA 540-R-04-004, October 2004). Sample results have been qualified based on the results of the data review process ( <b>Attachment D</b> ). Criteria for acceptability of data were based upon available site information, analytical method requirements, guidance documents, and professional judgment					

**DV Flag Definitions:**

J-	The result is an estimated quantity, but the result may be biased low.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected above the associated level; blank contamination may exist.
UJ	The analyte was analyzed for, but was not detected. The reported limit is approximate and may be inaccurate or imprecise.

**Acronyms:**

%	Percent
%D	Percent difference
%R	Percent recovery
°C	Degrees Celsius
CCV	Continuing calibration verification
CLP	Contract laboratory program
DV	Data validation
EPA	Environmental Protection Agency
ICAL	Initial calibration
ICV	Initial calibration verification
LCL	Lower control limit
LCS	Laboratory control sample
LCSD	Laboratory control sample duplicate
MS	Matrix spike
MSD	Matrix spike duplicate
NFG	National Functional Guidelines

## Data Validation Checklist (Continued)

QAPP Quality Assurance Project Plan

QC Quality control

RPD Relative percent difference

SW-846 *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, EPA. Available: <http://www3.epa.gov/epawaste/hazard/testmethods/index.htm> [November 5, 2015]

UCL Upper control limit

**ATTACHMENT A**  
**SAMPLE SUMMARY**

## SAMPLE SUMMARY

Client: Oneida Total Integrated Enterprises LLC

Job Number: 680-109515-3

Sdg Number: 680-109515-03

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
680-109515-35	HP0320J-GS24"	Solid	01/27/2015 1425	01/31/2015 0852
680-109515-36	HP0332A-CS6"	Solid	01/28/2015 0900	01/31/2015 0852
680-109515-37	HP0332A-CS12"	Solid	01/28/2015 0905	01/31/2015 0852
680-109515-38	HP0332A-CS18"	Solid	01/28/2015 0910	01/31/2015 0852
680-109515-39	HP0332A-CS24"	Solid	01/28/2015 0915	01/31/2015 0852
680-109515-40	CV0503A-CS6"	Solid	01/28/2015 1015	01/31/2015 0852
680-109515-41	CV0503A-CS12"	Solid	01/28/2015 1020	01/31/2015 0852
680-109515-42	CV0503A-CS18"	Solid	01/28/2015 1025	01/31/2015 0852
680-109515-43	CV0503A-CS24"	Solid	01/28/2015 1030	01/31/2015 0852
680-109515-44	CV0503B-CS6"	Solid	01/28/2015 1050	01/31/2015 0852
680-109515-44MS	CV0503B-CS6"	Solid	01/28/2015 1050	01/31/2015 0852
680-109515-44MSD	CV0503B-CS6"	Solid	01/28/2015 1050	01/31/2015 0852
680-109515-45	CV0503B-CS12"	Solid	01/28/2015 1055	01/31/2015 0852
680-109515-46	CV0503B-CS18"	Solid	01/28/2015 1100	01/31/2015 0852
680-109515-47	CV0503B-CS24"	Solid	01/28/2015 1105	01/31/2015 0852
680-109515-48	CV0312A-CS6"	Solid	01/28/2015 1330	01/31/2015 0852

**ATTACHMENT B**  
**FIELD DUPLICATE EVALUATION**

## Evaluation of Field Duplicate Results

## Attachment C

Analyte	680-109515-36 HP0332A-CS6"	RL	680-109515-56 HP0332A-CSD6"	RL	Unit	Avg. RLx5	RPD	Absolute difference	2x Avg RL	Action
Aluminum	23000	21	19000	24	mg/kg	112.5	19	NA	NA	None, RPD ≤ 50%
Arsenic	22	2.1	27	2.4	mg/kg	11.25	20	NA	NA	None, RPD ≤ 50%
Iron	29000	21	44000	24	mg/kg	112.5	41	NA	NA	None, RPD ≤ 50%
Lead	110	1.0	110	1.2	mg/kg	5.5	0	NA	NA	None, RPD ≤ 50%

Note: If the analyte was not detected, then the cell was left blank.

J - Estimated value

mg/kg - Milligrams per kilogram

NA - Not applicable

RL - Reporting limit

RPD - Relative percent difference

UJ - Not detected and the limit is estimated

Precision is based on either the absolute difference between sample results or RPD. If the sample results are less than or equal to 5x's the RL, then precision is based on the absolute difference between duplicate results. If sample results >5x's RL, then precision is evaluated using RPD. J-Flag sample results whenever the absolute difference is greater than the RL (2x for soils) or the RPD >20% (50% for soil). Table above presents the results for detected analytes only.

## Evaluation of Field Duplicate Results

## Attachment C

Analyte	680-109515-48 CV0312A-CS6"	RL	680-109515-57 CV0312A-CSD6"	RL	Unit	Avg. RLx5	RPD	Absolute difference	2x Avg RL	Action
Aluminum	13000	21	8500	24	mg/kg	112.5	42	NA	NA	None, RPD $\leq$ 50%
Arsenic	54	2.1	93	2.4	mg/kg	11.25	53	NA	NA	J/UJ-flag, RPD > 50%
Iron	46000	21	50000	24	mg/kg	112.5	8	NA	NA	None, RPD $\leq$ 50%
Lead	140	1.1	110	1.2	mg/kg	5.75	24	NA	NA	None, RPD $\leq$ 50%

Note: If the analyte was not detected, then the cell was left blank.

J - Estimated value

mg/kg - Milligrams per kilogram

NA - Not applicable

RL - Reporting limit

RPD - Relative percent difference

UJ - Not detected and the limit is estimated

Precision is based on either the absolute difference between sample results or RPD. If the sample results are less than or equal to 5x's the RL, then precision is based on the absolute difference between duplicate results. If sample results >5x's RL, then precision is evaluated using RPD. J-Flag sample results whenever the absolute difference is greater than the RL (2x for soils) or the RPD >20% (50% for soil). Table above presents the results for detected analytes only.

**ATTACHMENT C**  
**CASE NARRATIVE**

**CASE NARRATIVE**  
**Client: Oneida Total Integrated Enterprises LLC**  
**Project: 35th Avenue Superfund Site**  
**Report Number: 680-109515-3**

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

**RECEIPT**

The samples were received on 1/31/2015 8:52 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.3° C and 2.1° C.

**SEMIVOLATILE ORGANIC COMPOUNDS (GC/MS) LOW LEVEL PAH**

Samples HP0320J-GS24" (680-109515-35), HP0332A-CS6" (680-109515-36), HP0332A-CS12" (680-109515-37), HP0332A-CS18" (680-109515-38), HP0332A-CS24" (680-109515-39), CV0503A-CS6" (680-109515-40), CV0503A-CS12" (680-109515-41), CV0503A-CS18" (680-109515-42), CV0503A-CS24" (680-109515-43), CV0503B-CS6" (680-109515-44), CV0503B-CS12" (680-109515-45), CV0503B-CS18" (680-109515-46), CV0503B-CS24" (680-109515-47) and CV0312A-CS6" (680-109515-48) were analyzed for Semivolatile Organic Compounds (GC/MS) Low level PAH in accordance with EPA SW846 Method 8270D. The samples were prepared on 02/02/2015 and 02/03/2015 and analyzed on 02/07/2015 and 02/10/2015.

Method(s) 8270D\_LL\_PAH: The following sample(s) was diluted due to the nature of the sample matrix: CV0312A-CS6" (680-109515-48), CV0503A-CS6" (680-109515-40), CV0503B-CS6" (680-109515-44), CV0503B-CS6" (680-109515-44 MS), CV0503B-CS6" (680-109515-44 MSD). Due this dilution, surrogate recoveries are outside control limits.

Method(s) 8270D\_LL\_PAH: Manual integration was performed on the following sample(s): CV0312A-CS6" (680-109515-48), CV0503A-CS6" (680-109515-40), CV0503B-CS6" (680-109515-44), CV0503B-CS12" (680-109515-45), CV0503A-CS12" (680-109515-41), CV0503A-CS18" (680-109515-42), CV0503A-CS24" (680-109515-43), CV0503B-CS18" (680-109515-46), CV0503B-CS24" (680-109515-47), HP0332A-CS12" (680-109515-37), HP0332A-CS18" (680-109515-38), HP0332A-CS24" (680-109515-39), HP0332A-CS6" (680-109515-36).

Method(s) 8270D\_LL\_PAH: The %RPD of the laboratory control sample (LCS) for preparation batch 369327 recovered outside control limits for the following analytes: 2 Methylanthralene

Method(s) 8270D\_LL\_PAH: The continuing calibration verification (CCV) analyzed in batch 370012 was outside the method criteria for the following analyte(s): Indeno[1,2,3-cd]pyrene and o-terphenyl. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

Several analytes have recoveries outside criteria low for the MS and MSD of sample CV0503B-CS6" (680-109515-44) in batch 680-369888. Benzo[k]fluoranthene exceeded the RPD limit.

The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount.

Refer to the QC report for details.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**METALS (ICP)**

Samples HP0320J-GS24" (680-109515-35), HP0332A-CS6" (680-109515-36), HP0332A-CS12" (680-109515-37), HP0332A-CS18" (680-109515-38), HP0332A-CS24" (680-109515-39), CV0503A-CS6" (680-109515-40), CV0503A-CS12" (680-109515-41), CV0503A-CS18" (680-109515-42), CV0503A-CS24" (680-109515-43), CV0503B-CS6" (680-109515-44), CV0503B-CS12" (680-109515-45), CV0503B-CS18" (680-109515-46), CV0503B-CS24" (680-109515-47) and CV0312A-CS6" (680-109515-48) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 02/02/2015 and analyzed on 02/04/2015 and 02/05/2015.

Method(s) 6010C: The following sample(s) was diluted due to the presence of manganese which interferes with lead: CV0503B-CS12" (680-109515-45). Elevated reporting limits (RLs) are provided.

Aluminum and Iron have recovery outside criteria low for the MS of sample CV0503B-CS6"MS (680-109515-44) in batch 680-369692. Arsenic and Lead failed the recovery criteria high.

For the MSD of sample CV0503B-CS6"MSD (680-109515-44) in batch 680-369692, Aluminum failed the recovery criteria low. Arsenic

and Iron failed the recovery criteria high. Also, Iron exceeded the RPD limit.

Refer to the QC report for details.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**PERCENT SOLIDS/MOISTURE**

Samples HP0320J-GS24" (680-109515-35), HP0332A-CS6" (680-109515-36), HP0332A-CS12" (680-109515-37), HP0332A-CS18" (680-109515-38), HP0332A-CS24" (680-109515-39), CV0503A-CS6" (680-109515-40), CV0503A-CS12" (680-109515-41), CV0503A-CS18" (680-109515-42), CV0503A-CS24" (680-109515-43), CV0503B-CS6" (680-109515-44), CV0503B-CS12" (680-109515-45), CV0503B-CS18" (680-109515-46), CV0503B-CS24" (680-109515-47) and CV0312A-CS6" (680-109515-48) were analyzed for Percent Solids/Moisture in accordance with TestAmerica SOP. The samples were analyzed on 01/31/2015 and 02/02/2015.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**ATTACHMENT D**  
**QUALIFIED SAMPLE RESULTS**

1A-IN  
INORGANIC ANALYSIS DATA SHEET  
METALS

Client Sample ID: HP0320J-GS24"

Lab Sample ID: 680-109515-35

Lab Name: TestAmerica Savannah

Job No.: 680-109515-3

SDG ID.: 680-109515-03

Matrix: Solid

Date Sampled: 01/27/2015 14:25

Reporting Basis: DRY

Date Received: 01/31/2015 08:52

% Solids: 77.6

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	19000	23	11	mg/Kg			1	6010C
7440-38-2	Arsenic	24	2.3	0.67	mg/Kg			1	6010C
7439-89-6	Iron	56000	23	7.9	mg/Kg			1	6010C
7439-92-1	Lead	29	1.1	0.60	mg/Kg			1	6010C

1A-IN  
INORGANIC ANALYSIS DATA SHEET  
METALS

Client Sample ID: HP0332A-CS6"

Lab Sample ID: 680-109515-36

Lab Name: TestAmerica Savannah

Job No.: 680-109515-3

SDG ID.: 680-109515-03

Matrix: Solid

Date Sampled: 01/28/2015 09:00

Reporting Basis: DRY

Date Received: 01/31/2015 08:52

% Solids: 82.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	23000	21	10	mg/Kg			1	6010C
7440-38-2	Arsenic	22	2.1	0.61	mg/Kg			1	6010C
7439-89-6	Iron	29000	21	7.3	mg/Kg			1	6010C
7439-92-1	Lead	110	1.0	0.55	mg/Kg			1	6010C

1A-IN  
INORGANIC ANALYSIS DATA SHEET  
METALS

Client Sample ID: HP0332A-CS12"

Lab Sample ID: 680-109515-37

Lab Name: TestAmerica Savannah

Job No.: 680-109515-3

SDG ID.: 680-109515-03

Matrix: Solid

Date Sampled: 01/28/2015 09:05

Reporting Basis: DRY

Date Received: 01/31/2015 08:52

% Solids: 83.7

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	20000	21	11	mg/Kg			1	6010C
7440-38-2	Arsenic	34	2.1	0.62	mg/Kg			1	6010C
7439-89-6	Iron	74000	21	7.4	mg/Kg			1	6010C
7439-92-1	Lead	44	1.1	0.56	mg/Kg			1	6010C

1A-IN  
INORGANIC ANALYSIS DATA SHEET  
METALS

Client Sample ID: HP0332A-CS18"

Lab Sample ID: 680-109515-38

Lab Name: TestAmerica Savannah

Job No.: 680-109515-3

SDG ID.: 680-109515-03

Matrix: Solid

Date Sampled: 01/28/2015 09:10

Reporting Basis: DRY

Date Received: 01/31/2015 08:52

% Solids: 83.0

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	15000	23	11	mg/Kg			1	6010C
7440-38-2	Arsenic	24	2.3	0.67	mg/Kg			1	6010C
7439-89-6	Iron	53000	23	8.0	mg/Kg			1	6010C
7439-92-1	Lead	38	1.1	0.60	mg/Kg			1	6010C

1A-IN  
INORGANIC ANALYSIS DATA SHEET  
METALS

Client Sample ID: HP0332A-CS24"

Lab Sample ID: 680-109515-39

Lab Name: TestAmerica Savannah

Job No.: 680-109515-3

SDG ID.: 680-109515-03

Matrix: Solid

Date Sampled: 01/28/2015 09:15

Reporting Basis: DRY

Date Received: 01/31/2015 08:52

% Solids: 82.5

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	19000	22	11	mg/Kg			1	6010C
7440-38-2	Arsenic	27	2.2	0.66	mg/Kg			1	6010C
7439-89-6	Iron	70000	22	7.8	mg/Kg			1	6010C
7439-92-1	Lead	34	1.1	0.59	mg/Kg			1	6010C

1A-IN  
INORGANIC ANALYSIS DATA SHEET  
METALS

Client Sample ID: CV0503A-CS6"

Lab Sample ID: 680-109515-40

Lab Name: TestAmerica Savannah

Job No.: 680-109515-3

SDG ID.: 680-109515-03

Matrix: Solid

Date Sampled: 01/28/2015 10:15

Reporting Basis: DRY

Date Received: 01/31/2015 08:52

% Solids: 85.6

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	12000	21	10	mg/Kg			1	6010C
7440-38-2	Arsenic	130	2.1	0.62	mg/Kg			1	6010C
7439-89-6	Iron	39000	21	7.3	mg/Kg			1	6010C
7439-92-1	Lead	220	1.0	0.55	mg/Kg			1	6010C

1A-IN  
INORGANIC ANALYSIS DATA SHEET  
METALS

Client Sample ID: CV0503A-CS12"

Lab Sample ID: 680-109515-41

Lab Name: TestAmerica Savannah

Job No.: 680-109515-3

SDG ID.: 680-109515-03

Matrix: Solid

Date Sampled: 01/28/2015 10:20

Reporting Basis: DRY

Date Received: 01/31/2015 08:52

% Solids: 83.9

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	9700	22	11	mg/Kg			1	6010C
7440-38-2	Arsenic	34	2.2	0.65	mg/Kg			1	6010C
7439-89-6	Iron	41000	22	7.7	mg/Kg			1	6010C
7439-92-1	Lead	85	1.1	0.59	mg/Kg			1	6010C

1A-IN  
INORGANIC ANALYSIS DATA SHEET  
METALS

Client Sample ID: CV0503A-CS18"

Lab Sample ID: 680-109515-42

Lab Name: TestAmerica Savannah

Job No.: 680-109515-3

SDG ID.: 680-109515-03

Matrix: Solid

Date Sampled: 01/28/2015 10:25

Reporting Basis: DRY

Date Received: 01/31/2015 08:52

% Solids: 83.6

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	12000	22	11	mg/Kg			1	6010C
7440-38-2	Arsenic	11	2.2	0.64	mg/Kg			1	6010C
7439-89-6	Iron	27000	22	7.5	mg/Kg			1	6010C
7439-92-1	Lead	25	1.1	0.57	mg/Kg			1	6010C

1A-IN  
INORGANIC ANALYSIS DATA SHEET  
METALS

Client Sample ID: CV0503A-CS24"

Lab Sample ID: 680-109515-43

Lab Name: TestAmerica Savannah

Job No.: 680-109515-3

SDG ID.: 680-109515-03

Matrix: Solid

Date Sampled: 01/28/2015 10:30

Reporting Basis: DRY

Date Received: 01/31/2015 08:52

% Solids: 82.9

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	12000	23	12	mg/Kg			1	6010C
7440-38-2	Arsenic	7.7	2.3	0.68	mg/Kg			1	6010C
7439-89-6	Iron	20000	23	8.1	mg/Kg			1	6010C
7439-92-1	Lead	18	1.2	0.61	mg/Kg			1	6010C

1A-IN  
INORGANIC ANALYSIS DATA SHEET  
METALS

Client Sample ID: CV0503B-CS6"

Lab Sample ID: 680-109515-44

Lab Name: TestAmerica Savannah

Job No.: 680-109515-3

SDG ID.: 680-109515-03

Matrix: Solid

Date Sampled: 01/28/2015 10:50

Reporting Basis: DRY

Date Received: 01/31/2015 08:52

% Solids: 82.5

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	13000	21	11	mg/Kg			1	6010C
7440-38-2	Arsenic	47	2.1	0.62	mg/Kg			1	6010C
7439-89-6	Iron	36000	21	7.4	mg/Kg			1	6010C
7439-92-1	Lead	130	1.1	0.56	mg/Kg			1	6010C

1A-IN  
INORGANIC ANALYSIS DATA SHEET  
METALS

Client Sample ID: CV0503B-CS12"

Lab Sample ID: 680-109515-45

Lab Name: TestAmerica Savannah

Job No.: 680-109515-3

SDG ID.: 680-109515-03

Matrix: Solid

Date Sampled: 01/28/2015 10:55

Reporting Basis: DRY

Date Received: 01/31/2015 08:52

% Solids: 83.3

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	10000	21	10	mg/Kg			1	6010C
7440-38-2	Arsenic	18	2.1	0.61	mg/Kg			1	6010C
7439-89-6	Iron	27000	21	7.2	mg/Kg			1	6010C
7439-92-1	Lead	82	10	5.5	mg/Kg			10	6010C

1A-IN  
INORGANIC ANALYSIS DATA SHEET  
METALS

Client Sample ID: CV0503B-CS18"

Lab Sample ID: 680-109515-46

Lab Name: TestAmerica Savannah

Job No.: 680-109515-3

SDG ID.: 680-109515-03

Matrix: Solid

Date Sampled: 01/28/2015 11:00

Reporting Basis: DRY

Date Received: 01/31/2015 08:52

% Solids: 82.2

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	10000	21	11	mg/Kg			1	6010C
7440-38-2	Arsenic	6.3	2.1	0.62	mg/Kg			1	6010C
7439-89-6	Iron	16000	21	7.4	mg/Kg			1	6010C
7439-92-1	Lead	17	1.1	0.56	mg/Kg			1	6010C

1A-IN  
INORGANIC ANALYSIS DATA SHEET  
METALS

Client Sample ID: CV0503B-CS24"

Lab Sample ID: 680-109515-47

Lab Name: TestAmerica Savannah

Job No.: 680-109515-3

SDG ID.: 680-109515-03

Matrix: Solid

Date Sampled: 01/28/2015 11:05

Reporting Basis: DRY

Date Received: 01/31/2015 08:52

% Solids: 80.3

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	15000	22	11	mg/Kg			1	6010C
7440-38-2	Arsenic	11	2.2	0.66	mg/Kg			1	6010C
7439-89-6	Iron	29000	22	7.8	mg/Kg			1	6010C
7439-92-1	Lead	15	1.1	0.59	mg/Kg			1	6010C

1A-IN  
INORGANIC ANALYSIS DATA SHEET  
METALS

Client Sample ID: CV0312A-CS6"

Lab Sample ID: 680-109515-48

Lab Name: TestAmerica Savannah

Job No.: 680-109515-3

SDG ID.: 680-109515-03

Matrix: Solid

Date Sampled: 01/28/2015 13:30

Reporting Basis: DRY

Date Received: 01/31/2015 08:52

% Solids: 86.4

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	13000	21	11	mg/Kg			1	6010C
7440-38-2	Arsenic	54	2.1	0.63	mg/Kg		J	1	6010C
7439-89-6	Iron	46000	21	7.4	mg/Kg			1	6010C
7439-92-1	Lead	140	1.1	0.56	mg/Kg			1	6010C